



Vomiting and Dysphagia Due to Fractured of Allograft After Anterior Cervical Discectomy and Fusion

Anterior Servikal Diskektomi ve Füzyondan Sonra Allogreftin Kırılmasından Dolayı Kusma ve Disfaji

Anterior Servikal Diskektomi ve Füzyon Sonrası Disfaji ve Kusma Dysphagia and Vomiting After Anterior Cervical Discectomy and Fusion

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Özet

Anterior cervical discectomy and fusion (ACDF) is commonly performed for cervical disk disease. Establishing Fibular allograft after discectomy is frequently applied. A variety of complications may occur such as dysphagia, dyspnea, bilateral vocal cord paralysis, recurrent laryngeal nerve paralysis, internal jugular venous thrombosis, cervical screw extrusion, bone graft extrusion, vascular injury and epidural hematoma. Dysphagia is the most common complication after ACDF and its etiology is still obscure. It usually improves in 6 months, but remains as a significant problem for some patients. Graft extrusion is a well - recognized complication. We present the case of 44 - year - old woman with dysphagia and persistent vomiting due to collapsed fibula allograft. She had undergone anterior C 5-6 discectomy and fusion with fibula allograft at our institute 7 months before. Her lateral cervical radiography showed collapsed fibula allograft, which was extruded toward the esophagus, at cervical 5-6 level. Fractured bone graft was removed by anterior cervical approach. After surgery, the patient's complaints were improved. Dysphagia has been very frequently reported due to various causes after ACDF. Whereas, feeling of nausea and vomiting have never been reported. Also extrusion or collapse of bone graft following ACDF has rarely been reported.

Anahtar Kelimeler

Anterior Cervical Discectomy; Anterior Cervical Fusion; Dysphagia; Vomiting

Abstract

Anterior servikal diskektomi ve füzyon servikal disk hastalığında yaygın olarak yapılır. Diskektomiden sonra fibula allograft yerleştirilmesi sıklıkla uygulanır. Disfaji, dispne, bilateral vocal cord paralizi, internal juguler venöz tromboz, servikal ve kemik greftin çıkması, vasküler yaralanma ve epidural hematoma gibi çeşitli komplikasyonlar anterior servikal diskektomi ve füzyondan (ACDF) sonra oluşabilir. Disfaji ACDF' den sonra en yaygın komplikasyondur ve etiyolojisi hala karanlıktır. Bu komplikasyon genellikle 6 ay içinde düzelir, ama bazı hastalar için önemli bir problem olarak kalır. Greftin yerinden çıkmasında iyi tanımlanan bir komplikasyondur. Biz fibula allogreftin çökmesine bağlı persistan kusma ve disfaji şikayetlerine sahip 44 yaşında bayan bir hastayı sunuyoruz. Olgu 7 ay önce kliniğimizde anterior yaklaşımla C5-6 diskektomi ve fibula greft ile füzyon ameliyatı geçirmişti. Onun lateral grafisinde, C5-6 seviyesinde greftin çöktüğü ve kemik fragmanlarının özofagusa doğru çıktığı görüldü. Cerrahiden sonra hastanın komplikasyonları düzeldi. Disfaji anterior servikal diskektomiden sonra çeşitli nedenlerden dolayı çok sıklıkla rapor edilmesine rağmen, bulantı ve kusma hiçbir zaman rapor edilmemiştir. Ayrıca kemik greftin çökmesi nadiren rapor edilmiştir.

Keywords

Anterior Servikal Diskektomi; Anterior Servikal Füzyon; Disfaji; Kusma

Introduction

Anterior cervical discectomy and fusion (ACDF) is one of the most common applied spinal procedures for the surgical treatment of cervical disc herniation. Various ACDF-related complications have been previously reported. The list of the reported complications includes: dysphagia, bilateral vocal cord paralysis, recurrent laryngeal nerve paralysis, internal jugular venous thrombosis, cervical screw extrusion, bone graft extrusion, vascular injury, epidural hematoma, hemothorax, dyspnea, infection, discitis, have been reported in the literature [1]. Delayed graft fracture following spinal fusion is rare. Bone graft extrusion following fusion has been reported in 3-14 % of cases [2]. Extruded or fractured fibular allografts are often associated with compression of the esophagus [3]. Dysphagia are the most common complications, to our knowledge, persistent feeling of nausea and vomiting after ACDF has not been previously reported. We reported a case of 44 – year - old woman with dysphagia and persistent vomiting, which could not be treated with anti-emetic drugs, owing to fractured and extruded bone graft 7 months after surgery.

Case Report

44- year- old woman presented with 1 - month history of persistent feeling of nausea, vomiting and dysphagia. She had undergone anterior cervical discectomy and fusion with fibular allograft in our institute for C5-6 herniated disc 7 months before. She stated that symptoms started approximately one month ago and had been progressively worsening. Persistent feeling of nausea and vomiting had been occurring, especially immediately afterwards eating and drinking. Vomiting could not be treated by anti – emetic drugs. Therefore, there was present

proach (Figure 4). There were no perioperative complications. The patient's complaints resolved one day after surgery. She was discharged on postoperative day 1.

Discussion

Anterior cervical discectomy and fusion is one of the most common applied spinal surgical procedures to treat cervical disc disease. Fatigue fracture of fibular allograft following ACDF is a rare complication. Dysphagia caused by extruded bone grafts is a well- known complication whereas feeling of nausea and vomiting has never been reported after ACDF. To our knowledge, this is the first report to describe the complication of feeling of nausea and vomiting.

A variety of mechanisms to explain dysphagia in patients with extruded bone graft have been described. They can be summarized as mechanic compression of the pharynx or the esophagus and an inflammatory reaction of prevertebral fascia resulting in fibrosis or adhesions of esophagus [3]. Dislodgement of graft is a known cause of dysphagia, common in the early postoperative stage, and dysphagia occurs in 45.9 %. The incidence of it varies widely from 2 % to 60 % [4]. Most studies have showed that swallowing problem tend to resolve with time. However there are some patients with persistant dysphagia that do not improve spontaneously [4].

Cause of nausea and vomiting occurred due to extruded bone graft immediately afterwards eating and drinking are unknown. There is no literature relevant to this subject. We propose that cause of vomiting may be gag reflex or irritation of the esophagus. The gag reflex is a protective a response that prevents foreign objects or noxious material entering the pharynx, the larynx and the trachea, except for normal swallowing, which can

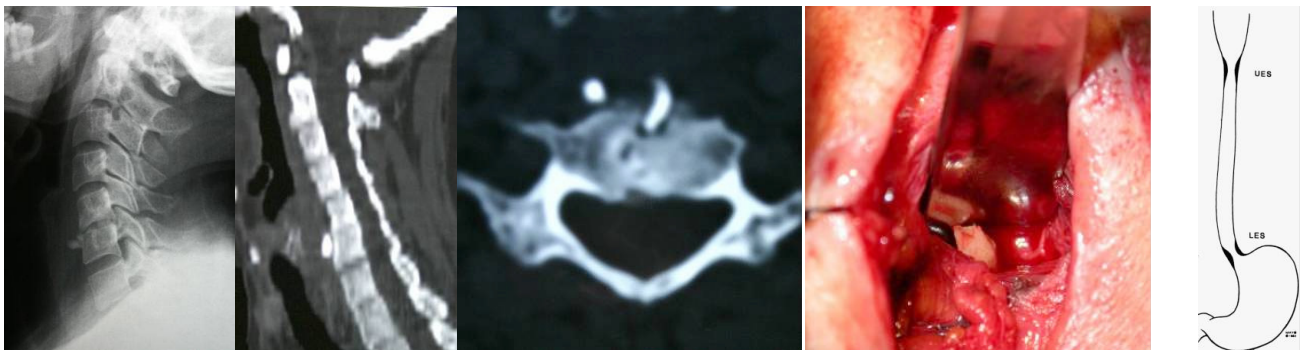


Figure 1. Lateral cervical spine radiograph showed fracture of the fibular allograft at C5 – 6. A portion of fractured graft was extruded toward the esophagus.

Figure 2. Sagittal CT showing fracture of the fibular allograft at C5 – 6. A portion of collapsed graft at C5 – 6.

Figure 3. Axial CT demonstrating fractured bone graft.

Figure 4. Perioperative imaging of portion of fractured bone graft.

Figure 5. Schematic representation of upper esophageal sphincter.

weight loss in the patient. On examination, she had a normal neurologic examination. The patient was referred to otolaryngology and thoracic surgery for evaluating of dysphagia and persistent vomiting. The otolaryngology and thoracic surgery did not suggest a pathology that could explain dysphagia, and vomiting. She had no history of gastrointestinal disorders. Plain lateral cervical radiograph and computed tomography demonstrated that intervertebral allograft was collapsed at C5-6 and the fractured bone graft was extruded toward the esophagus (Figure 1, 2, and 3). The patient was also performed barium swallowing and esophageal endoscopy for dysphagia and persistent feeling of nausea and vomiting. These were reported as normal.

The portion compressing to the esophagus of fractured fibular allograft was removed with forceps by anterior cervical ap-

proach (Figure 4). There were no perioperative complications. The patient's complaints resolved one day after surgery. She was discharged on postoperative day 1.

also be used to induce vomiting. The afferent limb of the reflex is supplied by the vagus nerve [5]. The esophagus compressed posteriorly may vulnerable to mechanical pressure and vomiting may create during eating as a reflex response. Other cause may become irritation. The strongest stimuli for vomiting are irritation and distension. At the upper end of the esophagus there is a zone which is called upper esophageal sphincter (UES), about 3 cm long (Figure 5)[6]. We speculate that the posterior wall of the esophagus at the upper esophageal sphincter is irritated by extruded bone graft during distention of esophagus of depending on eating and drinking; therefore, vomiting may produce as reflex.

There are most studies regarding with the application of an anterior cervical plate for preventing extrusion of bone graft. Anterior cervical plating have improved fusion rate for one- level

procedures and dramatically increased in multilevel constructs [7]. Furthermore, application of an anterior cervical plate minimizes graft - related complications. The use of the instrumentation with fusion has been resulted in increased fusion rates of 92.6 % of the disc spaces operated on [7]. Causes of graft collapse include mechanical weakening of the graft, inadequate purchase of bone graft, malposition of graft, poor postoperative immobilization of spine [8]. The diagnosis may be correctly established by CT, which clearly defines the morphology and size of the extruded or fractured bone graft and its relation to the esophagus. The barium swallow test may contribute to confirmation of the esophageal compression and obstruction. Imaging of the esophagus with endoscopy to rule out esophagus strictures is also indicated.

Many authors advise conservative treatment with anti - inflammatory drugs, antibiotics and dietary nutrition for patients with dysphagia. We suggest that extruded and fractured bone grafts in patients with dysphagia and vomiting is removed by the anterior cervical approach. Excision of extruded part of collapsed graft result in immediate remission of the dysphagia and vomiting.

Conclusion

A ideal graft material, proper operative technique, patient selection and rigid anterior plate fixation is essential to achieve radiographic fusion, which is required to obtain ideal clinic outcome. Anterior cervical plate should be used in order to increase rates of fusion, and to prevent graft complications such as collapse, extrusion. If bone graft at intervertebral space is put in a suitable shape, incidence of fracture of graft can minimize. If there is extruded or fractured bone graft associated with dysphagia and vomiting, surgery should be performed to improve complaints of patients.

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